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Lynnwood Link Extension

# **Sound Transit Board Briefing Book Light Rail Alternatives Evaluation**

Northgate to Lynnwood

**April 2012**

**APPENDIX C**



## APPENDIX C

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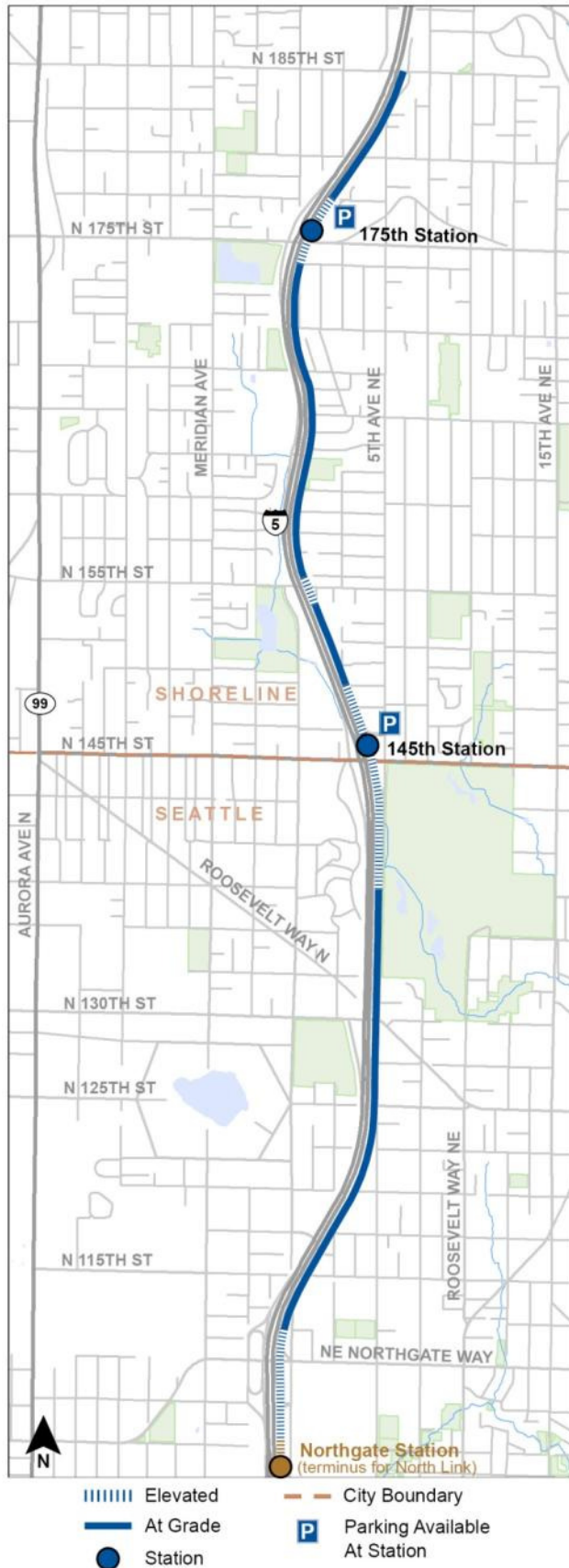
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**ALTERNATIVES A9, A10 and A11 ADDED BY THE  
SOUND TRANSIT CAPITAL COMMITTEE**

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### A9: AT-GRADE/ELEVATED TO 145<sup>TH</sup> AND 175<sup>TH</sup> EAST SIDE STATIONS



**Guideway:** The guideway runs along the east side of I-5, in WSDOT rights-of-way wherever possible, generally on elevated structure from Northgate Station to north of 117<sup>th</sup> Street, then in retained cut/fill to north of 130<sup>th</sup> Street, then elevated to north of 145<sup>th</sup> Street, then retained cut/fill to 175<sup>th</sup> Street except for elevated crossings of 155<sup>th</sup> and 175<sup>th</sup> Street. North of 175<sup>th</sup> Street the guideway runs in retained cut/fill to 185<sup>th</sup> Street.

**Stations:** An elevated station with up to 500 park and ride stalls and on-street bus facilities would be located at NE 145<sup>th</sup> Street. An elevated station with up to 500 park and ride stalls and on-street bus facilities would be located at NE 175<sup>th</sup> Street.

#### Relative pros and cons of this alternative:

- Provides regional service coverage in North Seattle and Shoreline
- 145<sup>th</sup> Street and 175<sup>th</sup> Street stations serve both local and freeway access and provides opportunities to feed existing commuter buses to rail, but all day bus service is limited
  - NE 175<sup>th</sup> Street congestion hinders access to the station
  - Walk access more difficult from west of I-5 due to freeway ramp crossings, hills and freeway undercrossing
  - Higher potential for traffic impacts due to existing congestion
  - Guideway profile optimized to reduce cost and provide additional flexibility to avoid some environmental impacts

**Evaluation results:** (see next page)

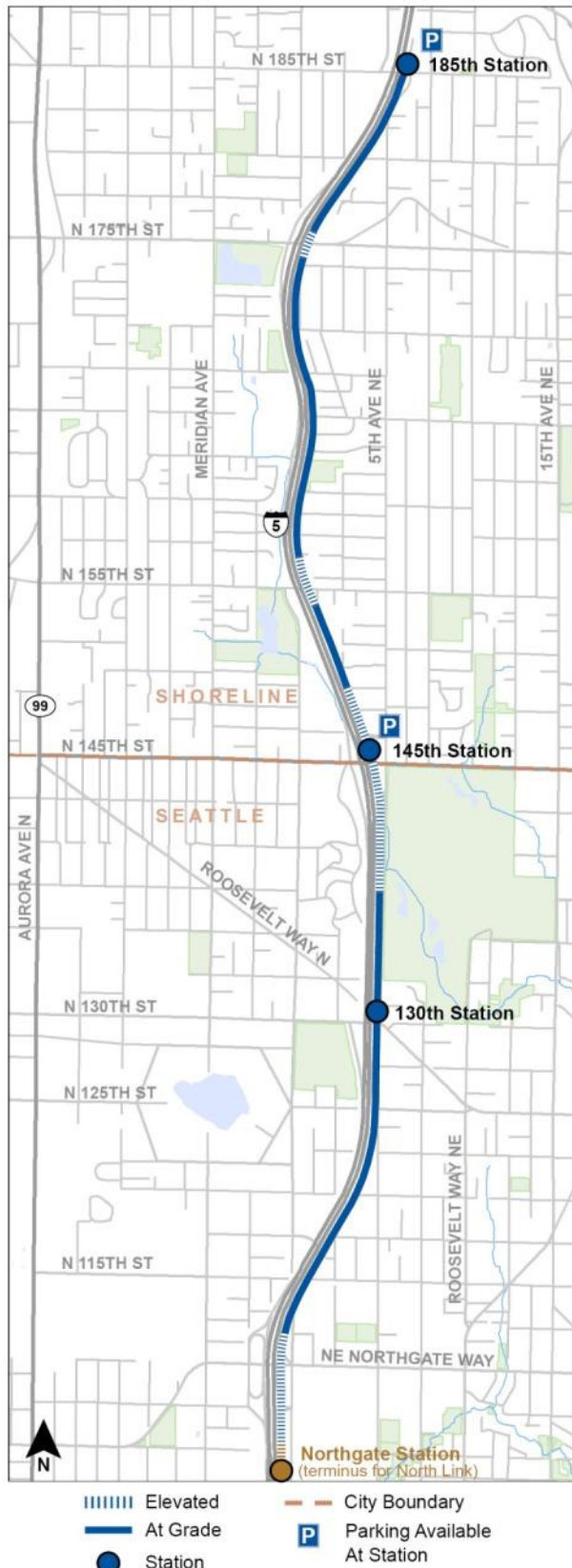
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### Evaluation results:

Criteria	Performance Compared to the AA I-5 Alternative
<b>Transportation Performance</b>	Improved regional auto access with proximity to I-5 interchange, although park and ride market is predominantly local. Auto and bus access affected by traffic congestion and backups at interchange ramps. Less desirable pedestrian and bicycle environment to and from the west due to presence of high volume ramps and intersections, hilly terrain, and crossing under I-5. Reduced existing bus access at 175 <sup>th</sup> with peak period-only service, compared with all-day service at 185 <sup>th</sup> .
<b>Ridership Potential</b>	Similar
<b>Potential Environmental Effects</b>	Similar, except for higher potential for traffic congestion impacts due to a park and ride and station on NE 175 <sup>th</sup> Street, which is currently congested. The 175 <sup>th</sup> Station increases property and visual impacts to nearby residential areas, while neighborhood impacts in the NE 185 <sup>th</sup> street area would be reduced.
<b>Development Potential</b>	Similar overall, but constrained on west side of I-5 by Ronald Bog.
<b>Cost Implications (2010\$ M)</b>	\$10M to \$15M more, which includes savings of less complicated construction around NE 185 <sup>th</sup> Street.
<b>Constructability</b>	Similar overall; increase in impacts at 175 <sup>th</sup> is offset by reductions at 185 <sup>th</sup> .
<b>ROW Implications</b>	Similar overall. A station at NE 175 <sup>th</sup> would reduce property needs at NE 185 <sup>th</sup> Street, but increase them at NE 175 <sup>th</sup> Street.

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### A10: AT-GRADE/ELEVATED TO 130<sup>TH</sup>, 145<sup>TH</sup> AND 185<sup>TH</sup> EAST SIDE STATIONS



**Guideway:** The guideway runs along the east side of I-5, in WSDOT rights-of-way wherever possible, generally on elevated structure from Northgate Station to north of 117<sup>th</sup> Street, then in retained cut/fill to north of 130<sup>th</sup> Street, then elevated to north of 145<sup>th</sup> Street, then retained cut/fill to 175<sup>th</sup> Street except for elevated crossings of 155<sup>th</sup> and 175<sup>th</sup> Street. North of 175<sup>th</sup> Street the guideway runs in retained cut/fill to 185<sup>th</sup> Street.

**Stations:** A retained cut/fill station with on-street bus facilities would be located at NE 130<sup>th</sup> Street. An elevated station with up to 500 park and ride stalls and on-street bus facilities would be located at NE 145<sup>th</sup> Street. An elevated station with up to 500 park and ride stalls and on-street bus facilities would be located at NE 185<sup>th</sup> Street.

#### Relative pros and cons of this alternative:

- Three stations provide more service coverage and ridership potential in this segment than the two stations included in Alternatives A1 through A4.
- Added station adds cost
- 130<sup>th</sup> Street station has more apparent opportunity for transit oriented development
- 145<sup>th</sup> Street station serves both local and freeway access and provides opportunities to feed existing commuter buses to rail, but all day bus service is limited
- Potential for closely-spaced 130<sup>th</sup> and 145<sup>th</sup> Street stations to compete for riders
- 185<sup>th</sup> Street station serves local access needs and supports potential redevelopment near the station
  - Guideway profile optimized to reduce cost and provide additional flexibility to avoid some environmental impacts such as ecosystems

**Evaluation results:** (see next page)

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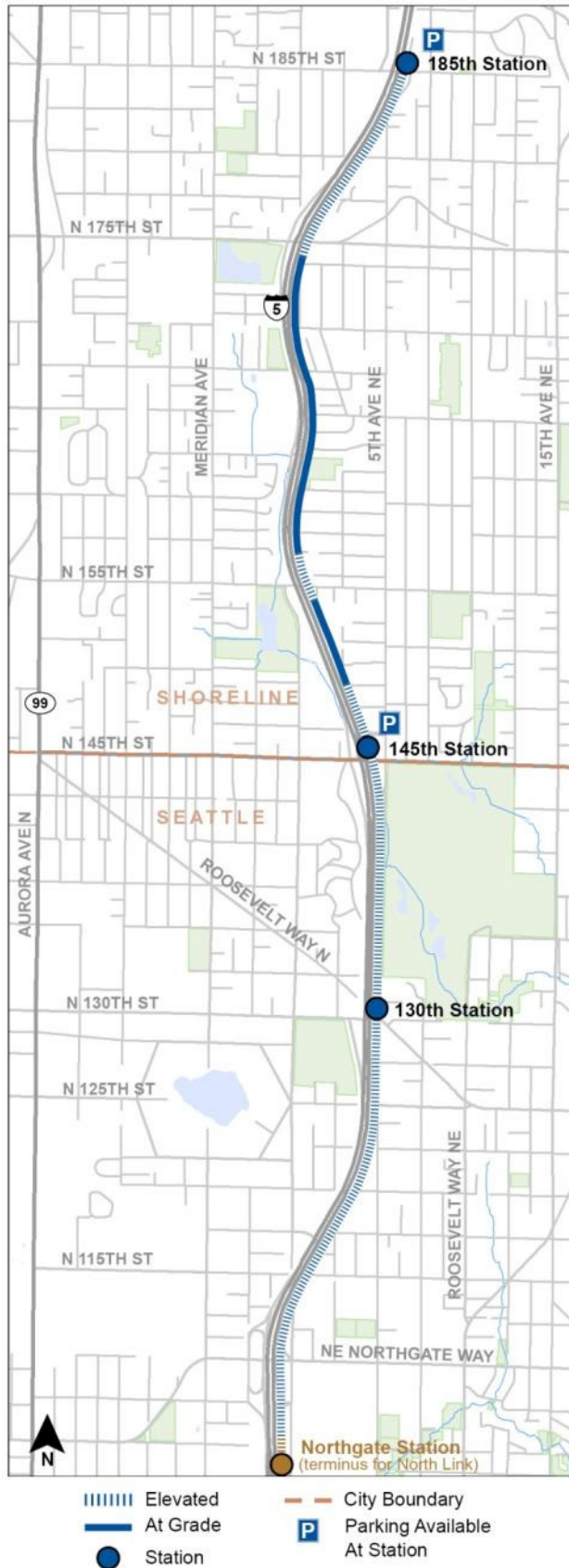
### Evaluation results:

<b>Criteria</b>	<b>Performance Compared to the AA I-5 Alternative</b>
<b>Transportation Performance</b>	Travel times would be slower due to added station
<b>Ridership Potential</b>	Moderate increase as result of increased population within walking distance of three stations instead of two
<b>Potential Environmental Effects</b>	Similar
<b>Development Potential</b>	Slightly better. 130 <sup>th</sup> Street Station is within 0.5 miles of existing commercial node. Otherwise, predominantly single-family development surrounds stations.
<b>Cost Implications (2010\$ M)</b>	\$40M to \$45M more
<b>Constructability</b>	Slightly more difficult, due to wider section at 130 <sup>th</sup> Street Station and fewer staging areas available at 130 <sup>th</sup> .
<b>ROW Implications</b>	Similar.



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### A11: MOSTLY ELEVATED TO 130<sup>TH</sup>, 145<sup>TH</sup> AND 185<sup>TH</sup> EAST SIDE STATIONS



**Guideway:** The guideway runs along the east side of I-5, in WSDOT rights-of-way wherever possible, on elevated structure from Northgate Station to north of 145<sup>th</sup> Street, then retained cut/fill to 175<sup>th</sup> Street except for elevated crossings of 155<sup>th</sup> and 175<sup>th</sup> Street. North of 175<sup>th</sup> Street the guideway runs primarily on elevated structure to 185<sup>th</sup> Street.

**Stations:** An elevated station with on-street bus facilities would be located at NE 130<sup>th</sup> Street. An elevated station with up to 500 park and ride stalls and on-street bus facilities would be located at NE 145<sup>th</sup> Street. An elevated station with up to 500 park and ride stalls and on-street bus facilities would be located at NE 185<sup>th</sup> Street.

#### Relative pros and cons of this alternative:

- Service coverage, station access, ridership and transit-oriented development opportunities similar to A10
- Added station adds cost
- Potential for closely-spaced 130<sup>th</sup> and 145<sup>th</sup> Street stations to compete for riders
- More elevated guideway could reduce potential impacts to I-5 bridges and ramps, some properties and some environmental resources, but increases costs

**Evaluation results:** (see next page)



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### Evaluation results:

<b>Criteria</b>	<b>Performance Compared to the AA I-5 Alternative</b>
<b>Transportation Performance</b>	Travel times would be slower due to added station
<b>Ridership Potential</b>	Moderate increase as result of increased population within walking distance of three stations instead of two
<b>Potential Environmental Effects</b>	Similar to slightly less.
<b>Development Potential</b>	Slightly better. 130 <sup>th</sup> Street Station is within 0.5 miles of existing commercial node. Otherwise, predominantly single-family development surrounds stations.
<b>Cost Implications (2010\$ M)</b>	\$120M to \$135M more
<b>Constructability</b>	Potentially less difficult because northbound off-ramp would not be rebuilt at 130 <sup>th</sup> Ave. However, there are fewer staging areas available at 130 <sup>th</sup> .
<b>ROW Implications</b>	Similar to slightly less.